

FIRE PROTECTION MAINTENANCE APPLICABLE TO NEW KONA TOWER

FAA Order 6930.1B

Total Flooding and Fixed Extinguishing Systems

Description of Work: The vendor shall provide all the necessary labor, equipment and supervision to perform the work required to properly maintain, monitor and inspect the fire alarm and detection systems in accordance with National Fire Protection Association recommendations, local codes and manufacturer's recommended procedures at the Airport Traffic Control Tower (ATCT) at Kailua-Kona, Hawaii. The vendor shall deliver a written report that describes the test and inspection results and services performed. This Statement of Work covers the requirements of the Federal Aviation Administration, for all work associated with the maintenance, monitoring and inspection of the fire alarm system.

Contractor Qualifications: Contractor must specialize in this type of work and have at least 3 years' experience. The Contractor shall submit evidence that they have obtained all required licenses and/or certifications for this type of work within the State of Hawaii.

Location: Kona Airport Traffic Control Tower 73-230 Weke'ula Street., Kailua-Kona, HAWAII 96740

Work Hours: All work shall be performed between the hours of 6:00am to 4:30am, Monday through Friday. No work shall be performed outside these hours or scheduled on Saturdays, Sundays or Federal holidays without prior approval of the SSC Manager and the airport authority. The service schedule shall be coordinated with the Contracting Officer's Technical Representative (COTR), unless specified otherwise.

A. Sprinkler Systems. Sprinkler system inspection, maintenance and testing are covered by NFPA 25, "Standard for the Inspection, Testing, and Maintenance of Water Based Fire Protection Systems."

(1) Quarterly.

- (a) Water flow alarm devices should be checked quarterly according to NFPA 25.
- (b) Test low air pressure alarms on pre-action and dry pipe valves.
- (c) Quick opening devices such as accelerators on dry pipe systems shall be tested quarterly in accordance with the procedure described in NFPA 25.
- (d) Test priming water levels on dry pipe and pre-action valves.

(2) Semiannually.

- (a) Test water flow rate through main test (drain) valve. Record pressure on FAA Form 6000-8, with valve closed and with valve fully open. NFPA 25 recommends that main drain valves be tested annually and after any work has been done on a sprinkler system. Main drain valves should be tested for wet pipe, pre-action, and dry pipe sprinkler systems. The following procedure is recommended by NFPA 25:
 - 1. Record the water pressure from the gage that shows incoming water pressure.
 - 2. Close the alarm control valve on alarm check valves.
 - 3. Check to see where the water discharge from the main drain will flow. Care should be taken to ensure landscaping, vehicles, or pedestrians will not be in the path of discharging water. Avoid discharging water on walkways during freezing weather.

4. Fully open the main drain valve.
 5. After the flow has stabilized, record the water pressure while water is still flowing.
 6. Close the main drain valve slowly.
 7. Open the alarm control valve.
- (b) Test all water flow alarm devices. NFPA 25 recommends that water flow alarms be tested quarterly.
- (c) Test all alarm, supervisory, and trouble signaling devices and systems. NFPA 72 covers the maintenance, inspection and testing of alarm initiating and supervisory devices. Semiannual testing is acceptable for valve tamper and other supervisory signal devices.
- (d) Check condition of sprinklers. NFPA 25 recommends annual inspection of sprinklers. Check for:
1. Cleanliness.
 2. Free from corrosion and dirt.
 3. Not painted or whitewashed.
 4. Not bent or damaged.
 5. Free from obstructions; no material shall be placed or stored within 18 inches of sprinkler.
 6. Properly rated.
 7. Required spares available.
- (e) Test operation of deluge and automatic valves in conjunction with testing of alarm devices and systems. NFPA 25 recommends that the priming water level for pre-action and dry pipe valves be tested quarterly in accordance with the manufacturer's instructions or as follows:
1. Open the priming level test valve.
 2. If water flows, drain it.
 3. Close the valve when water stops flowing and air discharges.
 4. If air initially discharges when the valve is opened, the priming water level is probably too low. Add priming water in accordance with the manufacturer's directions.

(3) Annually.

- (a) Test operation of dry pipe valves. Clean and adjust as required. NFPA 25 recommends that both pre-action and dry pipe valves be trip tested annually. "Dry" trip tests may be done annually as long as a full "wet" trip test is done every three years. Annually, the interior of each dry pipe valve and pre-action valve shall be inspected, parts examined and cleaned, and any required repairs made.
- (b) Inspect all fire department connections. NFPA 25 recommends that fire department connections be inspected quarterly, the system retested.

- (c) Check operation of sprinkler system that protects cooking equipment and ventilation systems. NFPA 96 recommends a semiannual inspection of extinguishing systems that protect cooking equipment. Fusible link activated sprinkler heads should be replaced annually.
- (d) Check and clean all sprinklers that protect cooking equipment and ventilation systems. Clean other actuating devices.
- (e) Check all gages with an inspector's gage to ensure reliability. NFPA 25 recommends that gages be replaced every five years or tested every five years with a comparison to a calibrated gage.
- (f) Test all outside or open sprinkler equipment. NFPA 25 recommends testing open sprinklers connected to a deluge control valve at full flow. Any plugged sprinklers or piping shall be cleaned or replaced and A visual inspection should be done of sprinkler pipe and fittings. Pipe and fittings shall be in good condition and free from mechanical damage, leakage, corrosion, and misalignment. Piping shall be free from external loading. Storage on piping or attachment to sprinkler piping shall not be allowed.
- (g) Sprinkler pipe hangers and seismic sway bracing shall be visually inspected to ensure hangers and bracing are not loose or otherwise damaged.
- (h) Check to see that a stock of spare sprinklers is available to match existing building systems.
- (i) Conduct a main drain test (see procedure under Semiannual testing).
- (j) Test freezing point of antifreeze solutions and add solution as needed.
- (k) Low point drains in dry pipe sprinkler systems shall be drained after each operation and before the onset of freezing weather.
- (l) Automatic air-pressure maintenance devices shall be tested annually if provided on dry pipe systems.
- (m) Inquiry should be done to see if a possible source of obstruction to sprinkler piping has been introduced. If so, an obstruction prevention investigation should be undertaken as outlined in NFPA 25.
- (n) Inspect and test all post indicator valves. NFPA recommend that post indicator valves be operated through their full range of motion annually.

B. Standpipe and Hose System.

(1) Quarterly.

- (a) Water flow alarm devices should be tested quarterly.

(2) Semiannually.

- (a) Test all water flow alarm devices (quarterly in accordance with NFPA 25).
- (b) Test all alarm, supervisory, and trouble signaling devices and systems.
- (c) Check all hose valves for leakage.

(3) Annually.

- (a) Check all gages with an inspector's gage to ensure reliability. NFPA 25 recommends a 5 year test interval unless the gage shows abnormal readings or other evidence of possible damage.
- (b) Unrack and check all hoses for possible water damage. Replace damaged hoses.
- (c) Annually all nozzles, couplings, and other hose accessories shall be inspected in accordance with NFPA 1962.
- (d) Inspect all fire department connections. NFPA 25 recommends quarterly inspections for fire department connections.

C. Pressure Reducing and Regulating Valves (Hoses and Sprinklers).

(1) Quarterly. Sprinkler and fire hose pressure reducing control valves shall be inspected for the following:

- (a) Each sprinkler valve is in the open position.
- (b) There is no leakage from the valve.
- (c) Downstream pressures are in accordance with the design criteria.
- (d) The valve handwheels are in good condition and not broken. (e) Outlet hose threads are not damaged on hose connections.
- (f) The reducer and cap are not missing on hose connections.

(2) Annually. A partial flow test shall be done to move the valve from its seat.

D. Fire Protection Water Backflow Prevention Assemblies.

(1) Annually.

- (a) A forward flow test shall be conducted at the fire protection system demand including hose streams at a test point downstream from the backflow preventer. If full fire flow cannot be achieved, the test shall be performed at the highest flow possible.
- (b) A backflow performance test as required by the local authority having jurisdiction shall be completed.

DRY AND WET CHEMICAL FIRE PROTECTION SYSTEM FOR KITCHEN EQUIPMENT.

A. Semiannually.

- (1) Check discharge piping for obstructions.
- (2) Check all fusible links.
- (3) Check the operation of all alarm and control devices.

(4) Non-pressurized Cylinder (cartridge operated)

- (a) Weigh cartridge and replace if the weight is ½ ounce less than the weight stamped on the cartridge.
- (b) Check the condition of dry chemical agent. If agent appears lumpy or hard, replace agent.

(5) Refer to the semiannual maintenance required under Section 402 for Dry Chemical Total Flooding and Fixed Extinguishing Systems.

B. Annually. Fusible links, including fusible links on fire actuated damper assemblies as well as automatic sprinkler heads shall be replaced annually.

C. Fire Alarm and Detection Systems. Inspection, testing, and maintenance shall follow the recommended procedures given in NFPA72, "National Fire Alarm Code." Document all findings and results.

(1) Quarterly.

- (a) Test sprinkler water-flow alarm switches by flowing water through the remote inspector test drain on wet pipe systems and the bypass alarm valve on pre-action, dry pipe, and deluge systems.
- (b) Check to ensure that alarm system components such as detectors, manual pull boxes, and alarm panels are accessible and free of obstructions.

(2) Semiannually.

- (a) Test alarm system supervisory signals including high/low air pressure switches, room-temperature switches, and water-tank level switches.
- (b) Test valve-tamper switches to ensure trouble signals are being reported in the event of valve movement from normal position.

(3) Annually.

- (a) Test to confirm that all alarm, trouble, and supervisory signals are properly being sent to the local fire alarm panel, and if applicable, being sent and received at the supervising central alarm station.
- (b) Test and verify each fire alarm circuit including signaling, notification appliance, and indicating device circuits for ground faults and open circuits.
- (c) Test the power supply to the alarm panel for proper supervision including loss of AC power and transfer to battery back-up.
- (d) Conduct a voltage test of the batteries in the fire alarm panel.
- (e) Conduct the specified battery tests as indicated in NFPA 72 for the specific battery including lead-acid type, nickel cadmium type, and sealed lead-acid type.
- (f) Conduct a functional heat test on all heat detectors except that non-restorable fixed temperature heat detectors that are less than 15 years old should not be tested using a heat source.
- (g) Conduct a functional test on all smoke detectors for both alarm and trouble. Verify that all signals are received at the local fire alarm control panel.

- (h) Test all manual fire alarm pull boxes.
- (i) Test all audible devices such as horns and bells to ensure that each device is functioning. Record the sound pressure level during testing.
- (j) Test all visual devices such as strobes. Check to ensure that occupancy changes within the facility have not obstructed the ability for occupants to see the visual devices.
- (k) Visually inspect and clean if necessary all air duct detectors. Test each detector to ensure proper receipt of trouble and alarm notification at the local fire alarm control panel.
- (l) Test other detection devices such as air sampling, flame, and projected beam detectors in accordance with NFPA 72.
- (m) Test all interlocked devices to the fire alarm system such as door closures, fan shut-off or start-ups, elevator recall, power shutdown, etc., for proper activation following alarm system activation. Test to ensure that the proper sequence of events occur following receipt of an alarm at the local fire alarm control panel.
- (n) Test the Digital Alarm Communicator Transmitter (DACT) by testing for line seizure while initiating an alarm signal while using the primary line for a telephone call. Transmission to the central station via the DACT shall be within 90 seconds. The primary and secondary lines from the DACT shall also be tested for proper supervision by disconnecting each line and ensuring that trouble transmission to the supervising station occurs within 4 minutes.

TOTAL FLOODING AND FIXED EXTINGUISHING SYSTEMS.

Perform the following tasks on sprinkler systems. Refer to Performance Check No. 402(b) and Maintenance Procedure No. 513 for required inspection, testing, and maintenance on sprinkler systems.